

Figure 1. Diagram of the parologue cluster

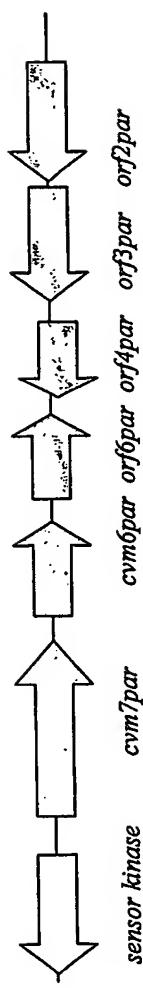


Fig.2 Orientation of *cvm7* to published cvm cluster

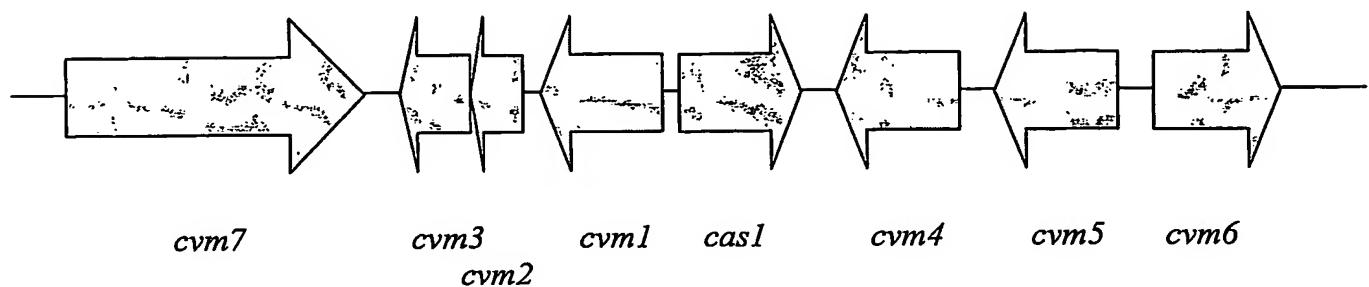


Fig 3. Annotated sequence of the parologue cluster

1 ccatggggc agcatecgag tggccatccc cggccgcaat
 81 gggcggtccc ggtgtcgccg gcccggatcta  stop sensor kinase
 161 tgggtttcc cgccggggc gggctgtgca gcccgatgt gccggcagt gcctccaccc
 241 cccgagccccc ggccaggggc ggccggccaccc cgccgctgt cgtccgtccc ggggtggccac 320
 321 atggacgtcg acgacgtgg caccggatgt cttggggcg
 401 cggacggttc ggggtggcg tccccgggtt ggatgtcgag
 481 gcccggggg qtcgcgcctc ggccgatggcc gcccgggttggaa
 561 cagcccgatcg gtcacccgtcg cagactgcgg gatcagatcg
 641 gcaagcccg ggagaccagg cgttgttgggg ggccgtcgatcg
 721 gggacgatcc gggcccgatcg cgggttgggg gcccgcctcg
 801 gcccggccagg cgggtccctcg tgtcggacgg catcggttgg
 881 cgtcggacgtt gatcggatcg caccacgtgg cggggaaatcc
 961 gcccgggtt cgtcgatccg cggccggcaag cccgactcgaa
 1041 gataccgggg ggaaaatcac ggccgggtccct ggcccagg ggcacataca
 1121 ggaccggcgaa qtccggccgg agaggatgtc cggcctcg
 1201 gggaccaggg tcggccacccg ccggcaggccc gcctgtccct
 10 20 30 40 50 60 70 80
 100 110 120 130 140 150 160 170 180
 190 200 210 220 230 240 250 260 270
 280 290 300 310 320 330 340 350 360
 370 380 390 400 410 420 430 440 450
 460 470 480 490 500 510 520 530 540
 550 560 570 580 590 600 610 620 630
 640 650 660 670 680 690 700 710 720
 730 740 750 760 770 780 790 800 810
 820 830 840 850 860 870 880 890 900
 910 920 930 940 950 960 970 980 990
 1000 1010 1020 1030 1040 1050 1060 1070 1080
 1090 1100 1110 1120 1130 1140 1150 1160 1170
 1180 1190 1200 1210 1220 1230 1240 1250 1260
 1270 1280

1281 gatggcggtg gccacgagggt cggtaaaacc ggccaggccgg tcctcgggtt cggggccag cggttcccgcg 9tcaggcaga 1360
 1361 tcgcacatcat caccgcac agccgtccct cgacgttgat cggcacgccc acgacccgaac ctaAGCCGGG CGCCCTGGCG 1440
 1441 AAGTCGGGG GTGGGGGGG CGACCTGGGG GCGTCGTCGA TCCGGGCCGG CGGCCCGTC TCGGACACCA GGTCAACAC 1520
 1521 GTTCGGGGG TGCGGGTCCA CCCGGGTGCC GATGGGAAG AGGGGGCGT GCAGACTCT GCAGACTCTT GGACCGAGCG CGGACGGCGC 1600
 1601 TCGCATGCG GTCGGSATCG AGCCTGATGA TTCCGGTCAC ATCGTTGCCCG AGCAATTCTC CGACTTCGGC GGCAGCCGC 1680
 1681 GCCTAACATCT GTTCCGGTGG GTGGCCCTG GCCACCCAGG TCGGACCCCG TCGGAGTGC GCCCGCTCT GCACGATCTG 1760
 sensor kinase →
 1761 TCGCACGAC ACGACCGCTG CGAGGCCCCC C1ACCCGCC C1ACCCGCC GATGAGCCGC GCATACCGGG TATCACGGCA CATCAGGATG 1840
 1841 ACCTCGCCG TGAACGCCG TCACTGTGGC CGGCCGAGT CGGAAACACG CGTCGGAAAT CAGCCCGGG AACGGGGGA 1920
 -1921 CCGTCTTCCT CCGTCGGCG CGGGGCACTG CGCCGGGG GAAATCCGCC T'GACCTCGGG AGTTGCAGC TAGCTGGAAAT 2000
 2001 CAGGGTTGG GGTGGTGG AAGGGATGTT GGCGCGTGGC GGGGATGCC AAGCGATCG TCCCAGTAC TTCTGGGAG 2080
 2081 TGGGTGGGG AGAGTCGGTC CGCTTCCCCG AGTGGGGCGC GAGGAGCTG CGGGCTCTCC ACCGGGAGA GATCCGGCAA 2160
 2161 CGGGCGAAGG AGCTGGGTG TCGGACGTCT TCGCATCCGA GAGAGTTG CCGGGTGTCC GGCACAGTCC 2240
 2241 CCACCGGGCT CTGTCATCAG CGCCGTCGGC GCCGTCAGGC ACGCA[GAGAA GATCGGATAC GCAGTGTACG AGTGCAGGA 2320
 2321 TGGGTTCTG TACGACGTCC CGGGCCTGCC GGTGCGTCA CCGTCCATCA CCGTCCCTGGG CTGTCCTGGC GTAGCGCGC 2400
 2401 ACGGCGGGAA ACTGGAGCTG GCGCCCTCCGC GTCAAGGGC CGTTTTGCC CTGCTGCTCA TCAACGGGGG CAGTGTGCTG 2480
 2481 CGGGTGTGACT cgatcgctt ccgtatctgg ggcaactcac caccggccgcg ggtccaccgcg acgctccagt octatgtgtc 2560

3b

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3921 ggcaacgggg acggcgccgg cgacggggac agcacccgg
 4001 ctccagagag gctcggttca ccctgcacga cgccgtgtgc
 4081 tgctggagga catggcgccg gccgacgccc cctcgctcgc
 4161 ctgctgtcg tggcacccatcg ggcgacccttc cggctcgcc
 4241 gtcgacccggc gcgccgggg tcctgtgaa cgccctggac
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 4401 tcgctccggc agggctcgcc cgccgcctgg gagacggaga
 4481 gagcgtggcc cccggcggtgc gccgggtgtct
 4561 ccgtgtcgcc ccatggggaa atcccgctgg agaacgtccg
 4641 gacccggcc ggctggagggtt cgtgcattccg ctggtcggg
 4721 gtccgtttcc tccggctcg ggccgcgtgg cacggctgtq^{stop cmm7par} →
 4801 GCGCTCCCG ACGGGGGT TGTATCCCCG GGGCACCGG
 4881 GCGGGGGCC GTGGGGTC GCGGGCCCC ACGGCCAC
 4961 CGGGGTCCG CACCCACCC GAGCCGGGTGTC CGGACCCAC
 5041 GAGCCGGGCC CGGACCCGGG CGCCGAGGCC GCGTGGCTGC
 5121 CGGGGGCCG GAGGACCGCA CGGTCTGGT CTCCGCCGC

cgcacacccct cacgttcgcg cccgtctctcg cgcggccgg 4000
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 GGCTGCACCG TACGGGACAC CGAAGGGCGC ACCTATCTCG 5200

3d

5201 ACGCCCTCGTC GGTCCTCGGA CTGACCCAGA TCGGCCATG ACGTGGGAG ATCGCCAGG CGGCCGCCGA CGAGATGGG 5280
 5281 ACACTGGTC ACTTCCACAC CTGGGCACC ATCAGAACG ACAAGGCAAT CGACTGGCC GCGGCCCTCA CGACCTGGC 5360
 5361 GCCCAGGGT CTCCAGGGC TCTACTTCAC CAGGGGGC GCGAGGGG TCGAATCGC CCTGGCATG GCCGTTACT 5440
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3e

6321 GGCCACGGCG GACGAGGTGG CGGACGGGT GGACTCGGTG CTTGGGGGGC TGGCACCCGA CGGGGGGATC GCGCGGGCC 6400
 stop *cm6par* →
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 7441 ACGTGTCCG GGAGGGGGC TCGGGGGC CCCTGGTCAAC GGTGGGGTC ACCGGGGCC ACGACACGA CGAGGGGGG 7520

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 7841 CGCCGGCGG GCGCTCTGAA CGGGCTCC CGGGGGACG GCGACCGGA GGGGGGGA GCGCAGGGAA CACGGAGCG 7920
 stop orfpar → ← stop orfpar
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 8001 CGGGAAGTC CACGGCTC TCGGCTCCA CGCGTCCAC CGCGTCTCG GCGTTCTCG CGTGTCCG CGCCCCCC 8080
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 off 3par
 9361 ACCACCCGGC CCTGGGCCT GAGCCTGCGC ACCGGCTCGA CGGAGGGCGG CACGGCTCG CGAAAGTCCA CGTCCTCGG 9440
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32

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 10881 GCGGCCCTCG GTGGCGATGC GCACCCGGAA TCCGTACACG AGGTGGGAC start *orf3par* ← CGGGCATGGT GAAATCGTC *TCdcacGGTG* 10960
 10961 *TCAGATGGCC* AGGGGGCGA AACCGCCGA CTGGAGTC TAGGCCACCG GTACCTCGAT CAGGAACGGG CGGGCGAGTC 11040

34

11041 CGGCCGCCCTT GGTAAGGGCG GCAGGAGCG AGGTGGGTCTC GGTGGCGGG AGCCTCGC AGCGTTGGC CTCGGCAGC 11120
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 11201 GCGTGGGG TCGTGTGTA CGACGACCT GACATCGGC AGCCCAAGC GCACGCCGT CTCGATGTCG GCGCTGTTGG 11280
 11281 AGTGGAGCC GCGTCGCC AGACGGCTC AGCATGACCA AGACGGCTC GCGGGGGGG GCGATCTGG CGCACATGGC GGCAGGCACT 11360
 11361 CGTAGGCCA AGCTGGAGCA GCCTGGGGAG GTGAGGAATC CGTACGGCTG GTCGACTTG GCGAAGAGCA CGCCGCTAGTG 11440
 11441 GCGGAGAAG CGGATGTCGC TGACGAGGT GCCCTTGTCTG AGGACGGAGT TCATGAGTC GATCACCTGG TGGACCCGCA 11520
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 12081 GTGGGGTGGC CCUGGACCAAG GGGGGGTGCG GTGGGGTGC CGTTCACTC GGCGCGAGG AGGTGACCG GCAGGCTGAT 12160
 12161 GAAGCTGGGA CCCACGGGCT CGATCCGGCT GTGGAGGACG GCGCTGCGA CGAGGGTGA GATGTCCTCG CCGCGTTCGA 12240

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12241	GCTGGACGCT	GAACTTGGTC	AGCGGGCCA	TCA	CGGGGT	GCTG	CACTGGTGGG	TGACGTGGG	GTAGGAGTCG	12320
12321	TACGACTCGG	ACTGCGGGC	CAAGCGATG	ACCGAGCTGC	GGTCCAGGGC	GGAGGTGGG	ACGCCGCTGG	CGAGGTGGT	12400	
12401	CATGCCGGGG	CCCAGGGTGC	CGAAGCACGC	CTCGGGGGGG	TTGGTGATCC	GGGGAGGAC	GTCCGCCATC	ACCCGGCCGG	12480	
12481	TGAACTCGTG	CGGGTCAGG	ACGAAGTGA	GTCTTTCGAC	CTCGTCAAG	AGATGGGG	ACGCCCTCCG	GGGACGACG	12560	
12561	CCGAATACAT	GGTGACACC	GTACTGGTGA	AGACGTTCGA	GCATGCCATT	CGGGTGATG	GTGGCATGG	AGATCTCCTT	12640	
12641	CGCATCGAC	GGGGCCGGG	ATGGGCCCG	GGAAAACGCC	GCACCGGGC	GTGCCACCG	GGTGGGCAC	ACCGGGGTG	12720	
12721	GTGGCCTTGC	CACTGTGGGG	ATCGCCCTTT	GGCGGGTCTC	GGACGCCGG	CTTGACAGA	ATGGCAAGG	CGCGTTCAAG	12800	
12801	GCATGGCTC	CATGGCTTC	GTGGCGCTT	TCGTGAATTC	CGTCGGCC	CGACGGTCTC	CATCCGATTC	CGTCGCCCTTC	12880	
12881	CGTCCACCGA	TCGGAGGAGA	ATCCATGGAT	GTCTGGCCGG	CGTGGGGCG	CAAGCCAGC	CTGAATCTT	TCCCATCGA	12960	
12961	GAACGGGTG	TCGGGGCGG	CCAGTGGCCG	GCTGGCCACC	GACGCCGTC	ACCCGTATCC	GTACTCGAG	ACCCGGTGG	13040	
13041	CCGTCTACGG	CGATGTCAGG	GGGTGGGG	AGGTGTAAGCC	GTACTGGAG	GACCTGGCCA	AGGCTCTT	CGGGGGCGC	13120	
13121	CACGCCGGT	TGAGTTCTT	GTCCGGTCTG	CACACCATGC	ACACCGFCT	GACGCCCTG	ACCCGGCGG	GGGGGGCGGT	13200	
13201	CCTGGTCCTC	GCCTGGAGGG	ACGGGGCA	CTACGCCACG	GTGACGATCT	GCCGGGGCTT	CGCTACCG	GTGAGGTCT	13280	
13281	TACCTTCAC	CGCGGACAC	CTGGAGATCG	ACT					13313	
	10	20	30	40	50	60	70	80		

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